AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A wideband pre-distortion linearization method for removing the influence of ~~the~~ a memory effect in a RF power amplifier and extending a linearization bandwidth of digital pre-distortion, comprising:

performing in-band pre-distortion compensation for an input signal according to characteristic parameters of said amplifier, to obtain an in-band pre-distortion signal;

performing out-of-band pre-distortion compensation for said input signal according to characteristic parameters of said amplifier, to obtain an out-of-band pre-distortion signal;

up-converting said in-band pre-distortion signal;

adding said up-converted in-band pre-distortion signal to said out-of-band pre-distortion signal which is not up-converted, at an input of said power amplifier; inputting the added signal to said power amplifier as an input signal;

taking a part of an output of said power amplifier as a feedback signal and comparing it with an original input signal;

regulating adaptively characteristic parameters of the amplifier used for generating the in-band pre-distortion signal and the out-of-band pre-distortion signal according to the comparison result, so as to have the feedback signal close to that of the original input signal as much as possible in terms of waveform in time domain or frequency spectrum.

2. (original) The method according to claim 1, wherein said out-of-band pre-distortion compensation mainly compensates for memory effect of said amplifier, while said in-band pre-distortion compensation mainly compensates for memoryless nonlinear distortion of the amplifier.

3. (original) The method according to claim 2, wherein said in-band pre-distortion compensation comprises at least compensation for nonlinear distortion associated with AM-PM distortion characteristics of said amplifier.

4. (original) The method according to claim 3, wherein said in-band pre-distortion compensation further comprises compensation for linear distortion associated with modulation frequency of said input signal.

5. (original) The method according to claim 3, wherein said in-band pre-distortion compensation further comprises compensation for distortion associated with undesired modulation-demodulation characteristics of an I channel and a Q channel in the system using quadrature modulation-demodulation.

6. (original) The method according to claim 1, wherein said out-of-band pre-distortion compensation comprises compensation for thermal memory effect in said amplifier and compensation for electrical memory effect in said amplifier.

7. (original) The method according to claim 6, wherein said out-of-band pre-distortion compensation further comprises compensation for nonlinear distortion associated with AM-AM distortion characteristics of said amplifier.

8. (original) The method according to claim 1, wherein said adaptive regulation of the characteristic parameter of said amplifier comprises two mode, that is, model parameter identification mode and model parameter adaptive regulation mode.

9. (currently amended) A wideband pre-distortion system for removing influence caused by memory effects in a radio power amplifier and extending linearization bandwidth of a digital pre-distortion, comprising:

an in-band signal pre-distortion processing unit, a quadrature modulating means (up converting means), an out-of-band signal pre-distortion processing unit, a signal summer, a RF power amplifier, a quadrature demodulating means (down converting means), and an adaptive model parameter exacting extracting unit;

wherein one part of an input signal is used to generate an in-band pre-distortion signal via said in-band signal pre-distortion processing unit, and another part of said input signal is used to generate an out-of-band pre-distortion signal via said out-of-band signal pre-distortion processing unit;

said in-band pre-distortion signal is modulated and up-converted to a carrier frequency via said quadrature modulating means (up converting means), and then added with said out-of-band pre-distortion signal which is not up-converted directly at said signal summer;

a combined signal obtained by the addition is transmitted to said RF power amplifier, and is sent out via an antenna after being amplified;

a part of an output signal of said RF power amplifier is provided to said adaptive model parameter exacting unit as a feedback signal after quadrature-demodulated and down-converted by said quadrature demodulating means;

said adaptive model parameter exacting unit compares said feedback signal with an original input signal and generates a parameter updating signal based on such comparison result, said parameter updating signal is provided to said in-band signal pre-distortion processing unit and said out-of-band signal pre-distortion processing unit to adaptively regulate a pre-distortion compensation parameter required by said in-band signal pre-distortion processing unit and said out-of-band signal pre-distortion processing unit.

10. (original) The system according to claim 9, wherein the system further comprises a first digital/analog converter connected between an output of said in-band signal pre-distortion processing unit and said quadrature modulating means, and a second digital/analog converter connected between an output of said out-of-band signal pre-distortion processing unit and said signal summer.

11. (original) The system according to claim 9, wherein the system further comprises an analog/digital converter connected between said quadrature demodulating means and said adaptive model parameter exacting unit.

12. (original) The system according to claim 9, wherein said in-band signal pre-distortion processing unit comprises an in-band memoryless nonlinear distortion correction unit.

13. (original) The system according to claim 12, wherein said in-band signal pre-distortion processing unit further comprises a finite impulse response filtering means.

14. (original) The system according to claim 12 or 13, wherein said in-band signal pre-distortion processing unit further comprises a quadrature modulation-demodulation error correcting means.

15. (original) The system according to claim 9, wherein said out-of-band signal pre-distortion processing unit comprises a power envelope calculation apparatus, a thermal memory effect correction means and an electrical memory correction means.

16. (original) The system according to claim 15, wherein said thermal memory effect correction means is a FIR filter.

17. (original) The system according to claim 15, wherein said electrical memory effect correction means comprises a FIR filter.

18. (original) The system according to claim 15, wherein said out-of-band signal pre-distortion processing unit further comprises a proportion unit.

19. (original) The system according to claim 9, wherein said adaptive model parameter exacting unit comprises a delay regulator, a signal comparator, an adaptive algorithm unit and a model parameter initial calculation unit.

20. (original) The system according to claim 19, wherein said adaptive model parameter exacting unit performs a function of model parameter identification and a function of model parameter adaptive regulation.

21. (original) The system according to claim 13, wherein said in-band signal pre-distortion processing unit further comprises a quadrature modulation-demodulation error correcting means.